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The Distribution of Seeds by the Department of Agriculture.

THE report of the Chief of the Seed Division of the Department of Agriculture for 1893 shows that the cost of this distribution during the fiscal year amounted to $160,000. More than 7,700,000 packages of seed were sent out, so that they cost something like two cents a paper, besides the expense of transporting through the mails more than two hundred and seventy-five tons of matter. It was more than half a century ago when the Commissioner of Patents began to send out a few improved varieties of seed to certain farmers at his own expense, and a small appropriation was made a few years later to aid him in this object, which at that time may have been praiseworthy. The money was voted for the purpose of giving the farmers and gardeners of the country an opportunity to try seeds which were new, so as to ascertain whether they had any practical value over those already in use. But of the 387 varieties sent out last year many of them were so common and well known that they hardly required the formality of printing their names upon the package.

The abuse has grown to its present dimensions in the face of constant protest, since there never was any excuse for sending seeds of Turnip or Cabbage, which could be bought at any country store, and even this outrageous violation of the intent of the law has been carried on with fraudulent accompaniments—that is, very often the seed of common plants which has been sent out has been worthless, and oftener than not it has been purchased at extravagant prices. To justify the practice it was urged that it was worth while to test common seeds in different regions to ascertain their relative local value, and, therefore, the various packages distributed contained plainly printed requests that the receiver should make trial of the seed enclosed and report the results to the Department. The chief of the division, assuming that five papers were sent to each person, estimates the number of recipients of the seed at about a million and a half of persons. In spite of the fact that every one of these was requested to give an account of his experience, so that an intelligent report might be furnished the following year, less than one out of a thousand acknowledged the courtesy of the Government by sending a line to Washington. These few reports were couched in vague and indefinite language, and conveyed no useful information as to the time of planting, character of soil, method of cultivation or adaptability to climate, and they were considered so utterly useless that they have never been published.

Secretary Morton has been making a praiseworthy effort to abolish this senseless and extravagant practice, but notwithstanding this the last Congress voted money to continue the abuse. The people have been assured that the Secretary will interpret the words "new and valuable seeds" according to the original intent of the law and will send no other. Even with this restriction the distribution is now needless, since our enterprising nurserymen and seedsmen are alert to procure and test every new plant which has any promise, and their catalogues, as well as our periodicals devoted to agriculture and horticulture, keep cultivators thoroughly informed as to novelties. Every intelligent man in the country ought to support the Department in this view of the case. Mr. Fagan, Chief of the Seed Division, in his report states what every one knows to be true, that for many years no useful purpose whatever has been served by the continued enlargement of the quantity of seed annually bought and its indiscriminate distribution to those who, by accident or design, become the recipients of this gratuity. If it was ever a useful practice the conditions have changed since the time when there were few propagating gardens or seed-farms in the country. Private industry and private capital have now built up establishments for raising new and valuable seeds and for propagating rare plants and flowers, so that there can be no possible loss to agriculture or horticulture incurred from the abandonment of this business by the Government.

There can be no doubt that the Secretary of Agriculture is thoroughly right in his contention that this seed division has outlived its usefulness, and we heartily agree with the statement of Mr. Fagan, that this distribution of seed is altogether wasteful, and that the continuance of the practice is an infringement on the rights of citizens engaged in legitimate pursuits.

Preparation for Spring.

AS the year is mellowing into autumn, with its indescribable, although somewhat pathetic, charm, we must not forget that the keenest delight a garden brings comes with the bursting forth of new life in the early year. Each season brings its special pleasure and satisfaction, but if we devote ourselves to specialties it is the spring garden which we have always advocated as peculiarly adapted to American habits and American climate, and, of course, all the preparation for this must be made before the long winter comes, when hardy plants are resting from their labors. The perennials which flower early have already stored up in bulb and root the material for new flowers, and now is the time to reset them where any change of arrangement is needed, so that they can become established before freezing weather, and be ready to unfold their beauty when they are warmed into active life once more.

In our cultural notes we have tried to give, from time to time, directions which will aid in the selection of varieties, and suggestions as to the proper treatment of each, and our present purpose is simply to remind our readers that there is work now to be undertaken if we are to look forward with any reasonable expectation of success in the garden next spring. The seeds of many early-flowering plants ought to have been sown long ago, and we should already have stout seedlings of Rock Cress, Spring Adonis, Primulas, Daisies, Aquilegias, Larkspurs, Iceland Poppies and many more for next year's flowers, but if we have neglected to do this at the proper season, plants of the

most popular varieties can all be bought of our growers. If it has been our purpose to try some of the rare species of Tulips or the new or rare varieties of Narcissi, Fritillaries, Scyllas, Ornithogalums or other plants of this class, we should have ordered the bulbs months ago from European houses, as was recommended in these columns at the proper time. But our own dealers keep a large stock of the most approved varieties, so that every garden can be furnished with great abundance and variety. Indeed, the best way for one who is something of a novice is always to buy of American seedsmen, and if he wishes to enlarge his collection he can study the European catalogues another year and order his seedsman to import for him such varieties as are not kept in stock here.

The point to be emphasized is that we cannot have a spring garden if we wait until spring to make it, any more than we can have a corn crop by planting the seed in autumn. There will be many bright days yet, but every hour of growing weather will be needed to prepare our plants for facing the winter in good condition, so that they will promptly respond to the first impulse which comes with the annual resurrection in spring. A good gardener must always be working for the future, and sometimes for the distant future, and this discipline of forethought and patience and hope is not the least of the advantages which come to him who tries in earnest to make the most of his opportunities in a garden.

Carpet Bedding.

WHOEVER has listened to popular criticism of the gardening in a public park has observed that no part of it attracts so much attention as the bedding plants, and especially those which are worked into what are known as carpet or pattern beds. The reason is not far to seek: here are striking displays of bright and even gaudy colors, formal and pronounced lines, or ingenious imitations of all sorts of objects. All this appeals at once to the average beholder who has never learned to grasp firmly the elusive principles of beauty in any composition; it gives something that the eye catches and the mind comprehends without exertion; and the admiration so easily excited finds ready expression in words. This kind of popular sentiment as to gardening-art is, of course, to be deplored. It takes pleasure in garish colors and strong contrasts, and shows a degree of taste not much higher than that of the child who is fascinated by the glitter of an express-wagon painted bright red and blue. It recognizes with satisfaction the skill of the artist who has developed something like a portrait of Columbus or Cleveland out of thickly planted Alternantheras and Pyrethrums, or has fashioned a map of the world or man-of-war out of Houseleeks and Echeverias. It is not the accuracy of the resemblance to objects animate or inanimate which these plants show in their uncomfortable positions; it is not the fact that the thing is done well, but that it is done at all, that excites admiration. It is like the satisfaction of the crowd at a display of fireworks when the likeness of some public man is blazoned in many-colored lights. "There's George Washington! there's his wig, and there's his chin! How clever!" Yet the portrait is of the rudest kind.

Pattern bedding is every season producing imitations of endless objects, from a spray of leaves to a butterfly, and from a roll of carpet to a pair of gates. Numberless designs are wrought out in curved and straight lines, and sheets of pronounced color all through the land; very few can be said to have any genuine artistic merit. This kind of gardening, therefore, having been now practiced for many years, would seem to be a failure. As an imitative art (if there is such a thing as imitative art) it is certainly a failure. Probably nobody ever tried it as an idealizing art, so that there appears at first that little is left for it to do.

And yet formal gardening provides material for artistic effect which natural gardening does not furnish. It can command defined lines of any shape, and even masses of color brilliant or subdued; surely these are resources of great value when directed by cultivated taste. That material of this kind can be useful and sufficient for beauty appears on the walls and floors of every house where there is a carpet, picture-frame or wall-paper of formal design. There is nothing essentially crude or vulgar in masses of brilliant hues, as Titian and Raphael well knew when they clothed their Madonnas and nobles in robes of gorgeous red and blue. But when they had the boldness to use the most glowing pigments as the motive for an entire picture, they had the skill which enabled them to adjust all accessory and surrounding tints to increase its brilliancy and decrease its garishness. And until the artist in red and yellow Alternantheras has acquired a perception of color-proportion in some degree analogous to theirs, he will be always liable to make elementary mistakes, however thorough his knowledge may be in the formidable nomenclature of his materials; for the average carpet-bedder is to the artist what the color-grinder is to the painter. Even the dullest planter is fairly safe in combining herbaceous plants and flowering shrubs, though of the most vivid hues, for Nature, if left to herself at all, will generally refuse to produce ungainly contrasts of form or color; but any one who meddles with the level and unbroken masses of shorn bedding-plants throws away this ready-made means and seizes special tools that none but peculiarly skilled workmen understand the use of. It is not wonderful, then, that there are so many costly and laborious compositions in public parks and on private lawns which earn and deserve no more than a smile of astonishment or contempt.

It need not be assumed, however, that the devising of neat and appropriate formal bedding cannot be achieved without a high degree of artistic skill. Plenty of color schemes are accessible to the study and application of any one with a fair amount of artistic feeling. A designer thus equipped will use his materials, not with a view to violent contrasts, but harmonies of tints, and will be able to produce an arrangement of lines and tones at once seemly and striking and restful to the eye, instead of tiring. Beds of this kind, which are not puerile caricatures of unsuitable objects or conflicts of hostile colors, have their own peculiar uses, to which nothing else is quite so well adapted. There are various phases of what is called architectural gardening, where terraces, stone balustrades and edgings and rectangular lines of walk prevail, where these regular curves and surfaces of clear color seem in peculiar harmony with the shaven turf and geometrical lines. There are places at the angles of roads or walks, and the junction of them with buildings, which suggest a regularly plotted scheme of Alternantheras or Echeverias to fill out and consist with the pronounced forms all about them. And in places such as these, where preciseness and formality seem to be suggested by the surroundings, a bed of sheared plants in regular lines may be used for the sake of its own beauty and the contrast it affords to less artificial forms of gardening. But where a red and yellow star or a multicolored Catherine-wheel is apparently dropped into the middle of a lawn, it is an excrescence, for whose existence no possible excuse can be found.

If bedding in set forms, therefore, is to be really an adorning of our gardens, it must be kept to its right place. It must be made to show its resources not so as to call up vain comparisons with incongruous things, nor to intrude mere meaningless patches of red and blue into quiet expanses of turf. Probably the highest success in work of this character will be found along the line of the most conventional imitation of suitable objects. The forms we see everywhere carved in stone, stamped on book-covers, woven into fabrics, worked in wood or metal, were derived originally from the lines of a leaf or plant, or from some simple geometrical figure, a circle or triangle, all of them modified to best suit the material in which they are used. Designs developed in this way, guided and re-

strained by the capacities and limitations of plant-growth, would probably result in something coherent and entirely new; and it may be that thought unhampered by precedent along such tracks as these will reveal to somebody that there are possibilities in carpet bedding which will develop it into what as yet it has rarely become—a thing of meaning and consistent design, and, therefore, in itself beautiful and desirable.

Pittsburgh, Pa. *H. A. Caparn.*

Native Trees and Shrubs about Montreal, Canada.—I.

IT is a generally recognized fact that the vegetation of any locality supplies the best and most comprehensive indication of the character of the climate. Of course, such an estimate must be comparative; we must have some other locality or localities in mind in order to appreciate resemblances or differences. It is probably safe to say that most persons who have never visited Montreal and vicinity, in the Province of Quebec, have an idea that the climate of the district is much more severe or arctic-like than it is shown to be by the plants which naturally grow there. Of course, the region cannot be compared properly with maritime European localities in the same latitude, but subject to the warm influences of the Gulf stream, for most such places having the latitude of Labrador enjoy a climate in which trees and shrubs can be grown which could not withstand the winters of Montreal, several hundred miles farther south. A glance at any isothermal chart of North America shows that the St. Lawrence River valley enjoys a somewhat more moderate climate than the territory on either side of it in the same latitude; and, accordingly, we find corresponding differences in the character of the natural vegetation and in the crops which can be grown. The flora is fairly considered Alleghenian in character.

To give an idea of the winter temperature at Montreal it may be stated that the McGill College Observatory records show a mean annual temperature of about eighteen and a half degrees, Fahrenheit, for the months of December, January and February during the ten years from 1870 to 1880, and in the last six of these years the extreme was something under twenty-five degrees below zero of Fahrenheit. The McGill College being situated in the shelter of the city and mountain, the temperature of the country outside may be taken as often several degrees colder. Temperature of thirty degrees below zero is uncommon.

The following list of trees and shrubs, growing naturally on the island of Montreal and the country on the southern mainland opposite, is by no means complete, but will serve to show better than anything else the character of the climate. The list is merely an enumeration of the species noted from time to time, with little attempt at exploration. I have never seen the flora of the shores of the river on the north side of the island, and most of the species recorded have been observed in the woods of the Caughnawaga Indian Reservation, and near the mouth of the Chateauguay River, opposite Lachine and St. Anne's, on Montreal Island.

As this is mostly a limestone region, in which plants of the Heath family do not thrive, the absence of members of this group will be noted, but there are points within twenty or thirty miles of the city of Montreal where Blueberries, Cranberries and other Ericaceæ are abundant.

Clematis Virginiana, the common Virgin's-Bower, is abundant in many localities.

Menispermum Canadense, or Moonseed, is not rare, the slender stems often clambering over stumps, rocks or shrubs. It is a pretty twiner here as elsewhere, with clean attractive foliage, and very hardy.

Berberis vulgaris, the common Barberry of Europe, is, of course, not native, but seems to be naturalized in some places.

Tilia Americana, Basswood, is plentiful, and grows to a fine timber size. The honey made by the bees when the trees are in flower is distinctly "Basswood honey."

Xanthoxylum Americanum, Prickly Ash or Toothache-tree, occurs along fences, in neglected stony fields and along the borders of woods as a shrub from five to ten feet high. It is sometimes medicinally used by the natives.

Ilex verticillata, Black Alder or Winterberry, is abundant in moist places. Nemopanthes Canadensis, Mountain Holly, is found in swamps.

Celastrus scandens, the Climbing Bitter-sweet or Waxwork, grows abundantly in rocky limestone soils, climbing over Hawthorns and other small trees; the fruiting plants are very handsome in autumn and winter.

Rhamnus alnifolia, a dwarf inconspicuous Buckthorn, is found in moist places. R. cathartica, the common Buckthorn of Europe, is quite hardy about Montreal, attaining the stature of a small tree, but so far as I know it has not really escaped from cultivation and become naturalized, as it has in some parts of the country. Ceanothus Americanus, the New Jersey Tea, occurs on the south shore of the St. Lawrence.

Vitis riparia is the common wild Grape of this region. The small blue-black fruit is gathered in large quantities in the autumn and sold in the Montreal market either for domestic use or making a sort of wine. The flowers are very fragrant. Phylloxera often occurs in abundance on the plants, but they generally seem to bear the disease without very serious inconvenience, although the fruiting of the plant must be affected. Ampelopsis quinquefolia, the Virginia Creeper or American Ivy, is common, and is often collected and planted for ornamental purposes.

Acer Pennsylvanicum, the Striped Maple or Moosewood Maple, is abundant. Planted singly it forms a neat ornamental little tree. A. spicatum, the Spiked Maple, is also locally called Moosewood Maple, and forms thickets of many-stemmed plants from ten to fifteen or more feet high in moist localities, where the next two species occur. The bark has some resemblance to that of the young Sugar Maple-trees, and plants of A. spicatum have sometimes been sold as Sugar Maples in Montreal market, of course to the disappointment of the purchaser, as the Spiked Maple never becomes a large and well-proportioned tree, and is considered practically worthless. A. rubrum, the Red or Swamp Maple, is very abundant in all swamp-lands, and lends the richest effects of coloring in the early autumnal landscapes. A. (dasycarpum) saccharinum, the White or Silver Maple, may be found growing plentifully in similar situations as the Red Maple, but it becomes a larger tree. Both species are often extensively tapped for their sap in spring, although this sap is not nearly as rich in sugar as that of the Sugar Maple, and is, therefore, more costly to manipulate, and is only collected when an abundance of the other cannot be had. A. (saccharinum) barbatum, the Sugar or Rock Maple, forms fine groves throughout the country around Montreal, and among them are many stately old specimens which have borne tapping by the primitive axe or gouge, and the more modern bit or auger, for a hundred years at least. The so-called variety nigrum apparently also occurs, but no sharp line of distinction can be drawn between the species and variety.

Rhus typhina, the Stag-horn Sumach, is very abundant in some localities, and occasionally forms small broad-spreading trees with stems ten inches in diameter. R. glabra, Smooth Sumach, occurs in the Caughnawaga Indian woods, on the south side of the St. Lawrence. R. Toxicodendron, the Poison Ivy, is common.

Robinia Pseudacacia, the common Locust, though not native, has escaped from cultivation in some localities. It becomes a fair-sized tree, and is as liable to destruction by borers as it is farther south.

Prunus nigra, the wild Red or Yellow Plum, which was included under Prunus Americana in Gray's *Manual*, is abundant in thickets on rocky limestone soils, especially on the south side of the river, opposite Montreal. The fruit is very variable in size, color and quality. It usually ripens from about the middle of August to the end of the month, and is often collected for domestic use. Growing in the

thickets the plants rarely become very large, and they often spread and increase by suckers. The true P. Americana, as now distinguished and separated, does not occur in this region. P. Pennsylvanica, the Bird or Pin Cherry, is common. P. serotina, the wild Black Cherry or Rum Cherry, becomes a large timber-tree, but the best of it has been cut from the woods. P. Virginiana, the Choke Cherry, while commonly seen as a shrub, is sometimes found with single stems twenty or more feet high and ten inches through. A variation, with large, clear amber-colored fruit, is sometimes found in or near French-Canadian gardens, and is usually more or less arborescent. The ripe fruit of this and of the black type is to be found in the city markets of Montreal. When fully matured it has sometimes a very pleasant flavor.

Arnold Arboretum. *J. G. Jack.*

Planting the Locust.

CONSIDERING the effort of thought and manual labor, perhaps nothing that I have done at the Agricultural College during the past twenty-four years is likely to be productive of more satisfaction or lasting benefit than the planting and care of trees on a small area of less than two acres. The planting was begun in the fall of 1876, and was continued for several years afterward. The land is a rather thin sandy loam. The trees were mostly planted in rows four feet apart, each kind usually by itself in whole rows, or in parts of several contiguous rows. The mistakes made are now probably as instructive as anything. For a greater or less time—five to ten years—the trees were cultivated. Including species represented by one to five trees and some shrubs, there are not far from one hundred and fifty kinds. Elsewhere, after five years of experimenting with various crops on the Jack-Pine plains, two members of the State Board of Agriculture told me that the most valuable part of the work done was the acre of land on which I had planted some sixty-five species of trees, some of which are doing well.

In the spring of 1880, in the college arboretum, I planted a few sprouts of common Locust, Robinia Pseudacacia, one year old, in the midst of Chestnuts, Ashes, Maples and Butternuts that were several years old. Some years ago the best tree was cut for an exhibition, but I have just measured another. It is now about forty feet high, the advanced growth of surrounding trees having kept off the lower limbs and caused it to shoot up with a long straight stem. Three feet above the ground the circumference is thirty-one inches, and eighteen feet above the ground twenty-four and a half inches. The trunk is clean and nearly free from borers, a result, I believe, of the shading by surrounding trees; perhaps, also, partially due to the small number of the Locusts in this isolated spot. Another tree is nearly as large, and both would make nice fence-posts or telegraph-poles. Sprouts have come up for some distance around in every direction. This suggests forcibly the propriety of planting sprouts or seeds of the Locust, a few here and there, in open places among young timber, where the soil is suitable for their growth.

Agricultural College, Michigan. *W. J. Beal.*

New or Little-known Plants.

Syringa Pekinensis.

ON page 165 of the third volume of this journal the portrait of a flowering branch of this north China tree was published. It had produced a few clusters of flowers for the first time in America in the spring of 1889 in the Arnold Arboretum, where it had been raised from seed sent by Dr. Bretschneider from St. Petersburg. The plants attained such a large size without flowering at all, and appeared to be such shy bloomers when they did flower, that we believed it was the least valuable of all the Lilacs as a flowering plant, in spite of its hardiness, rapid growth and excellent habit. Like many other plants, however, Syringa Pekinensis does not show what it is capable of in the early years of its life, and does not begin to flower freely until it has grown to a good size, but that it can in time produce its large clusters of white flowers in profusion is shown on page 385 of this issue, which is reproduced from a photograph of a plant which stands in deep rich soil, in a garden near Boston, and has been allowed to spread its long graceful branches in all directions. The habit of Syringa Pekinensis is excellent, as the illustration shows; the foliage is pleasing in color, and is not injured by insects or disease; and the flower-clusters, which appear a week or ten days earlier than those of Syringa Japonica, and about ten days later than those of Syringa Amurensis, are produced more freely on old well-established plants than they are on either of these species. They appear, too, on the lower as well as on the upper branches, while on Syringa Japonica they are usually confined to the upper part of the tree. The disagreeable Privet-like odor, which is common to all the Lilacs of this section (Ligustrina), is less pronounced in this species than in the others. Altogether, Syringa Pekinensis in New England is a very beautiful, desirable and perfectly hardy small tree. It requires, however, strong moist soil and plenty of room in which to display the graceful sweep of its branches.

Plant Notes.

Viburnum cassinoides.—This handsome shrub, which has its home in the swamps of our northern states, succeeds well in any ordinary garden-soil, and, like other members of the genus, deserves a larger place in our parks and gardens than it has yet received. Just now its clusters of berries, some of them bright pink, some flesh-colored, contrasting in color among themselves and with the dark green leathery leaves, give the plant a singular attractiveness. Later on the berries will be dark green and the foliage will assume rich autumn colors. In June it bears abundantly broad cymes of cream-white flowers, while its vigorous health and its compact habit make it serviceable at all seasons. V. nudum is a closely allied plant of more southern range, and like V. cassinoides, when taken from its native swamps into good garden-soil, it abandons its spindling habit and spreads out into a broad mass of lustrous foliage that makes it worth planting, even in choice collections of shrubbery.

Sternbergia lutea.—This is by no means a new plant, but, although the bulbs are not expensive, it is much more rare in gardens than it deserves to be. It is one of those bulbous plants which rest during the summer and throw up flower-spikes in September, and, like the autumn Crocus and Colchicum, it always affords a pleasing surprise by its unexpectedness. Its flowers are often called Crocus-like, which is only partially true. They are a beautiful clear yellow, two inches or more long and funnel-shaped, but they are borne on scapes from four to six inches long, and as they usually stand out at an angle from the stem, the general effect is altogether different from that of a short-stemmed Crocus, and the common name, Winter Daffodil, by which they are known in England, is much more appropriate. Unlike the autumn Crocus, the attractive foliage appears with the flowers and remains all winter. The leaves are from six to twelve inches long, narrow, slightly keeled and very dark green, and they add much to the appearance of the plant. A colony of Sternbergias on a front border makes a beautiful mass, since the flowers last for a long time and are very useful for cutting. As we have said, the leaves appear with the flowers and ripen off in the spring. They seem perfectly hardy here, however, but some cultivators hold that the plants are stronger if they are covered with a sash in winter to prevent them from being crushed by the snows. In Europe they are often grown on the borders of water or in bogs, but here they flourish well in any well-drained garden-soil and increase rapidly. There is a stronger variety with larger

Fig. 62.—Syringa Pekinensis, in a Massachusetts garden.—See page 384.

flowers, known as Sicula, which locates the home of this plant as the island of Sicily, but it is probably of this variety that Mr. Whitall writes that the flowers are sometimes five inches in diameter. There is also a very narrow-leaved variety, Græca, with flowers intermediate in size between the two named above. Sternbergia lutea is said to be the "Lily of the Field" referred to in the New Testament Scriptures.

Cypripedium Charlesworthii.—The discovery of this plant about a year ago was a sensation among Orchid growers, and two flowers of it exhibited at a meeting of the Royal Horticultural Society last September sufficed to command for it a first-class certificate. The novelty of a Cypripedium with a dorsal sepal which was rose-colored made it very interesting to hybridizers who had been long looking for such a feature. The fact, also, that it blooms in late summer and early autumn and its close alliance with the popular C. Spicerianum gave it an additional value. By good fortune enormous importations have been made, so that, although it is such a new plant, it has already flowered abundantly both in England and in America. The variability of color in the dorsal sepal which the plant presents is noted in the current number of the *Orchid Review*. Not only does the rose-color fade in some instances until it becomes almost a pale lilac, but the marbling varies considerably, so that it is occasionally almost absent, while in other flowers the white predominates. The same variation appears in the flowers which have been produced in this country, where the dorsal sepal is sometimes almost identical in color with the rose-purple of the lip of our native C. acaule. It seems to grow more freely than C. Spicerianum, and its remarkable staminoide, with its new departure in color, has already set the hybridists at work, and some striking variations in form and color are confidently anticipated. It seems strange that a plant of such striking characteristics should have remained so long undiscovered.

Cultural Department.

Oncocyclus Irises.

I HAVE read much about these beautiful plants in Garden and Forest, and have been thoroughly interested in Mr. Gerard's frequent accounts of them. These notes have induced me to plant this class of Irises in a small way myself, so that I have accumulated a little experience of my own. In the hope of inducing others to make a trial of these and other Irises too little known in our gardens, I feel impelled to set before your readers the experience of the Rev. Henry Ewbank, as recorded in a recent number of *The Garden* (London), and adapt this somewhat to American conditions. Every one who knows these plants will agree that they are among the brightest ornaments of the hardy garden. Mr. Ewbank considers Iris Lorteti as the most beautiful of flowers, and while this judgment may not be generally concurred in, few people who have seen a specimen of this plant in bloom or of I. Korolkowi, I. Gatesi, I. paradoxa, I. Iberica, or even of the better-known I. Susiana, will deny that they take high rank among flowers both for beauty of form and of color.

Many persons who have tried to grow these plants have not been perfectly successful, but our knowledge of their wants and habits has been growing, so that we can now venture to give general rules for their treatment, and with a little experience any one can plant them with a fair assurance of success. Mr. Ewbank's plan of cultivation rests upon two principles, which are perfectly reasonable when the climate of their native country and their manner of growing are considered. In the first place, in imitation of the climate of central Asia, Persia and northern Syria, arrangements must be made for drying off the plants perfectly in summer. Very little moisture is enough to keep their roots excited after they should be soundly ripened and at rest—and this means certain decay and death. To prevent this it has been the practice to lift the roots and dry them off, replanting them in late August or September, when they will send up leaves which remain green all winter. Many failures occurred when this plan was followed because the species has been developed in hard dry soil, where they are left under the full rays of the sun to bake in the ground, and they, therefore, resent any root-disturbance, which is the second point to be constantly borne in mind. The problem, then, is how to dry them off without removal.

Mr. Ewbank observed Iris Susiana growing very well on a raised platform, and this suggested a new idea. He, therefore, placed the Irises in a platform-bed raised above the ground-level, with paving-stones below, which allowed the moisture to drain off the roots in winter, but which cut it off from below, and so prevented it from rising in the summer-time. He put sashes over them in early June in the expectation that they would soon dry off, but they still continued to grow. The truth was that the upper six inches of soil in the bed acted as a mulch to the lower six inches, and kept them moist, so that all his calculations were defeated. Since the roots were not to be disturbed, he could not lift the plants, but he carefully removed the top soil from among them, and left the roots on little mounds in the bed, so that the sun could shine all about them and evaporate all the water from the lower stratum of soil. After this treatment a few dried stalks and leaves were the only visible reminders that the plants had ever been in bloom, and every one dried off in safety. He left them to parch until the middle of September, when they seemed anxious to start, and replacing the soil back on the beds, he removed the sashes so that the plants could receive the rain. All of them did very well during the winter, although the foliage, of course, was more or less injured by storms, and they flowered abundantly the next spring.

In our dry hot summers it will not be required to remove the earth from among the plants in a bed of Irises. Indeed, I have seen them growing on the south side of a house-wall, and in a bed not raised above the general ground-surface. Here they flowered well, and a sash placed over them after the blooming season and kept over them during the summer-time gave them the drought and heat needed for ripening and rest. Of course, they were covered early and the ground became perfectly dry about them. This is the critical point, for they are hardy against our winter cold and need no covering at that season.

Where a house-wall at the north does not insure absolute dryness for the bed in summer this must be secured in some other way. The bed may be made over a layer of broken stone, or, at all events, it must be so constructed that the drainage will be always perfect, so as to exclude entirely the moisture which would naturally rise from below during the warm season. With the earth perfectly dry our July and August suns can be trusted to give the plants all the roasting and resting they require. The points to be observed are that the sash shall be put over them early enough, and that the soil shall be kept absolutely free from moisture. There is no danger from the heat of summer or the cold of winter. We need additional experience as to soils—some varieties appearing to do well in one kind and others in another. But it is safe to begin experiments in good garden-soil, where, if they are not planted too deeply, and are cared for as above suggested, these Irises will well reward any one who gives them this special treatment, for their flowers possess an ethereal beauty and a delicacy and refinement in their rich and yet subdued colors which few of their rivals in the floral kingdom can show.

Staten Island. *T. B. Ellis.*

Narcissus poeticus and its Hybrids.

NEARLY all the cross-bred Narcissi of value for outdoor planting are the offspring of Trumpet Daffodils, yellow, white or bicolor, and N. poeticus, or the Pheasant-eye Narcissus. Indeed, the only notable exception is N. odorus, the sweet and useful Campernelle Jonquil, which has originated between yellow forms of the Trumpet Daffodil and N. jonquilla. It is curious, by the way, that Mr. Barr, our most experienced authority upon the Narcissi, should, in his catalogue, except N. odorus from hybrids and call it a species. Nothing is more certain than that N. odorus is derived from this cross. To the former comprehensive cross must be assigned all the flowers, now so largely grown, which are grouped under the designations incomparabilis, Barri, Leedsi, Humei, Nelsoni, Backhousei, montanus. I have ascertained by experiments, beyond any doubt, that the many varieties of Trumpet Daffodil with N. poeticus will produce all the forms which we grow under these names, but that N. Burbidgei is a secondary hybrid, the result of crossing N. incomparabilis again with N. poeticus. The difference between N. Burbidgei and these other classes is quite sharp and distinct, three of the anthers in N. Burbidgei being raised well above the others, or, in more scientific terms, being biserial visibly at a glance. I find this character to be quite unfailing as a mark of division. The present classification of these hybrids of N.

poeticus serves very well, with one or two exceptions. No separation need be made between the sections incomparabilis and Barri, for both commonly arise from the same cross and the very same pod of seed. And N. montanus should certainly be included under N. Leedsi, for it comes, as they do, from the intercrossing of white Trumpet kinds and N. poeticus. N. Leedsi, var. Gem, is merely a larger form of N. montanus, and I have raised flowers from this cross which practically reproduce them both.

The great value, from the point of view of our gardens, of these hybrids is their great vigor, which they owe to Narcissus poeticus. It commonly happens among my own seedlings that a delicate Trumpet Daffodil, difficult to increase or even keep in health in my garden, will produce a vigorous form of incomparabilis, strong and prolific. The beautiful Leedsi Daffodils are a striking example of this infusion of the stronger blood into the weaker. The white Trumpets—N. cernuus, albicans, etc.—are notoriously fastidious about soil and other conditions. In my own garden, for instance, they will scarcely keep alive. But most of their progeny by intermarriage with N. poeticus, notably such flowers as Leedsi type, Duchess of Brabant, Amabilis and others, flourish here and everywhere like weeds.

To Narcissus poeticus we also owe the beautiful orange, and sometimes almost scarlet coloring, which its hybrids exhibit in the edge of, or occasionally suffused throughout, their crowns. To what extent this coloring matter will be transmitted is always most uncertain. The very same pod of hybridized seed will yield flowers with deep red cups or crowns, and flowers without a trace of such color. A remarkable instance of this uncertainty came under my own observation. One of my finest and most brilliantly colored seedlings is Albatross, which came from the well-known poeticus ornatus, by pollen of Empress, the great bicolor Trumpet. The hybrid remains almost a pure poeticus in plant and bloom, save a great increase in size, the flower sometimes measuring five inches across, and a somewhat enlarged crown, which has a sharply defined ribbon-edge of intensely bright orange-scarlet. But from the same pod came another flower, Seagull, almost the counterpart of Albatross, except that the ribbon-edge is deep yellow and not red.

The most vividly colored of all hybrid Narcissi known to me is Lulworth. It is not large, nor is the perianth so shapely and firm as in some varieties. But the cup is of deep chrome-yellow, broadly edged and suffused with glowing red, and the flower has a luminous "red-hot" quality which makes it quench all other red-cupped kinds set side by side with it. I am acquainted with several other Narcissi which, looked at separately, appear to have more red in them than Lulworth, but the latter quite "snuffs them out" when they are brought together.

Narcissus poeticus itself is capable of much improvement, and it has always appeared to me strange that the earlier workers at raising seedling Narcissi have made no attempt in this direction. To enlarge the flower and deepen the crimson of the eye should be the aim. For many years I have raised a very large number of seedlings between N. poeticus ornatus, which has been the existing standard of form, by reason of its circular flower with broad overlapping petals, and N. poeticus poetarum, which has a deep crimson eye, but flimsier petals and a worse constitution than ornatus. Thus I have obtained some very fine flowers of increased size and substance, round in shape, and having the eye colored deeply to its base. Such a flower is Horace, large, very broad-petaled, and with a richly colored eye. It gained the medal for the best new Narcissus shown at the Royal Horticultural Society meetings during the present year. I am hopeful of a further improvement in size and color of this lovely Narcissus.—G. H. ENGLEHEART, in *The London Garden*.

The Water-garden.

IN my scheme of gardening many of the favorite plants of one season are apt, for one reason or another, to disappear the next, especially if they are plants which flower after the early summer. The Nymphæas, however, one and all, have a charm of which one never wearies, and the water-garden is the one feature of my little pleasance which could not be spared. In this very dry season it has been a joy and comfort at all times, and, singularly enough, insect enemies were never fewer, and though there was no general replanting of varieties, flowers have been very plentiful.

Water-lilies are universal favorites, and no flowers are more beautiful in their setting of lush green leaves, especially if these are surrounded by ample spaces of limpid water, with, perhaps, a foil of Grasses, Sedges, Irises and other plants to complete the picture. As it has been often said, this is a picture possible to make in any sunny garden, and one sure to interest and please every one. This is a statement which, in my experience, could not be made about any other family of plants. My garden friends have very diverse tastes, and I learned long since to expect appreciation only in spots, as it were, for my passing fads, but the water-garden is unanimously approved. By this I do not mean my special garden, but the water-gardens in general, which are now becoming more numerous. There seems to be a hesitancy, I find, to undertake the cultivation of Water-lilies, and a desire to know the sunny side of such a garden; to be informed as to its drawbacks; to know the exigencies and enemies the plants are subject to, and the difficulties of their cultivation.

First, as to its healthfulness: A tank or pond supplied with vegetation and animals, in the way of fish and frogs, should prove a real aquarium where conditions of life are so balanced that animals and plants shall be healthy and the water remain limpid. All this can be realized in a pond if it is kept clear of vigorous weeds and does not receive foul surface-drainage. In artificial tanks or ponds bad weeds are not likely to become established, and one has only to fight the minute Algæ which so quickly form masses and choke up the pores of larger plants. These Algæ do not appear every year. This season none have troubled me. In my tanks, which are suitable in size for a small garden, the water will sometimes become foul in winter from being kept too closely covered in moderate weather, and in March the water is siphoned off as soon as the coverings are removed. If planting is done, the manure used will stain the water for a while, but this soon disappears. My tanks are supplied with sewer connections and a hose is convenient, but, as a rule, this is only used to make up evaporation or to clear the water from floating particles which will sometimes gather. During a spell of abnormally hot weather fresh water is supplied liberally every day, using the hose every half-hour, and aerating the tank water by elevating the nozzle of the hose above the surface. This care may not always be necessary, but it is prudent with a small tank. Aphides are fond of aquatic plants, and in getting rid of these pests nothing is so simple and serviceable as a dusting of tobacco-powder. This is allowed to remain a day or two, and then washed off. Various other forms of insect-life are found on or among the plants, but these are usually not harmful, and they are accidental, rather than annual, visitors. The fish and frogs will take care of many of them. Nature here supplies another destroying element, the house cat having an unbounded appetite for my special breed of light green frogs, and giving about the only anxiety connected with the tanks.

To make a water-garden complete one should have an artificial bog, which in this connection could be easily supplied with moisture. One can scarcely imagine an addition to a garden which would be more interesting, and in which one could cultivate more beautiful plants.

Elizabeth, N. J. *J. N. Gerard.*

For the Perennial Garden.

I FIND nothing more satisfactory in a sunny border than the perennial Scarlet Phlox, which flowers from July until frost, and forms a superb mass of glowing color against a background of shrubs that have finished flowering. These flaming masses, here and there broken into by the large blossoms of the white variety, or alternating with them, are brilliantly effective. This Phlox requires little care and succeeds with moderate watering. If the terminal bunches are removed as they cease to flower the laterals will continue to bloom until very late in the season. Tall Larkspurs, cut down after their first flowers are past, reappear in autumn with shorter spikes of blue, which combine well with other colors, notably with the sunny disks of the perennial Sunflower, which is as good for cutting as it is ornamental in the border. I have likewise a partiality for the old-fashioned Bee Balm. Its masses of rich cardinal-colored flowers continue for two months or more if the flowers are kept cut when their rays fall. Here the June blossoms, both of shrubbery and border, are so mangled by the Rose-chafer that we do not try to care for their defaced and blackened forms, but all gay flowers that come after the tenth of July are gladly welcomed, the Balm among them.

Hingham, Mass. *Mary C. Robbins.*

The Reine Claude Plum.—Those who are planting Plums should not overlook the Reine Claude, or Bavay Green Gage, as it is also known. This plum is peculiar in many respects. It is much larger than the common Green Gage, but otherwise

resembles it. The flavor is rich; the time of ripening is the very last of September. The plums do not tend to rot and are free from curculio stings. After ripening they hang on the tree a long while without rot or loss of quality or drying up. The tree is stocky, a good grower and good cropper. On the whole, for a really first-rate plum, I know hardly one to surpass the Reine Claude.

Clinton, N. Y. *E. P. P.*

Dendrobium Phalænopsis Schrœderianum.—As the flowering season of this species comes around, one is more convinced than ever that it is among the very best, not only of Dendrobiums, but of all tropical Orchids. As one plant after another comes into bloom they show a remarkable range of color, varying through pale lilac and rose up to crimson and purple. The plants, too, are very floriferous, and the flowers endure for a long time. Imported plants become established quickly when properly taken care of, and they seem to increase in beauty every year. They should be suspended in the stove near the roof, when they will grow vigorously and show that the admiration which they have universally excited is well deserved.

Wellesley, Mass. *Frank Gould.*

Correspondence.

Winter Pears.

To the Editor of Garden and Forest:

Sir,—In reference to winter pears, may I inquire if it is safe to set the trees out in autumn? Would Anjou, Winter Nelis, Lawrence and Josephine de Malines be a good list?

New Brunswick, N. J. *R. A.*

[Pear-trees can be safely set out in autumn if they are set early and firmly and well mulched. A good list for almost any section east of the Mississippi, where Pears grow, would be Anjou, Winter Nelis, Josephine de Malines and Patrick Barry. It is always advisable, when planting for home use, to experiment to some extent. A stocky Pear-tree, five or six feet high and suitable for planting, is not expensive, and an outlay which allows a test of several varieties need not be large. Every one will then settle on a few favorites, and the others can be grafted out if desirable. Winter pears should be picked as late as possible, handled with special care and stored in a dry dark room until just before they are wanted for use.—*E. P. P.*]

The Water Chinquapin.

To the Editor of Garden and Forest:

Sir,—I was interested in the note which appeared in your issue for August 22d, on your beautiful yellow-flowered Nelumbium. This plant has never become established in English collections, while Nelumbium speciosum is grown with great ease. Is it hardier than N. speciosum? If some of your skillful growers would tell us how to manage it we shall be greatly obliged.

By the way, you speak of it as Nelumbo lutea. Is this a printer's error, or is it a new rendering of what we have been in the habit of calling Nelumbium luteum?

Kew. *W. W.*

[Nelumbo lutea is the name of this plant as it appears in the sixth edition of Gray's *Manual*. This vernacular name, taken directly from the Ceylonese, was used by Adanson in 1763 and by Gærtner in 1788. Undoubtedly, it has been adopted in the *Manual* because of its priority to the Latinized name Nelumbium, which was not used until 1799. It may be, that our Yellow Nelumbo is somewhat hardier than the Indian species, and yet they are both practically hardy in this latitude, N. speciosa having been naturalized in Central Park and other places near New York. The tubers of neither of the plants will live when frozen, but in shallow water and in soil which is not too hard the roots of both will grow downward so as to be out of reach of the ordinary winter frosts. Some people complain here that large roots of Nelumbo lutea sometimes fail to start, but Mr. Tricker finds that it will grow just as easily as N. speciosa, either from the roots or from seed, although both are occasionally uncertain. He treats both plants in the same way; that is, he starts the seed indoors in April in a temperature of from seventy to seventy-five degrees, Fahrenheit, and it will germinate in a week. If the seedlings are kept moving they will be in nine-inch pots by the middle of May, and early in June he plants them out where they will remain. They will not bloom the first year, but there will be abundant flowers the next season if they are not molested. Seed may also be planted out where the plants are intended to grow in June. The hard shell of the seeds should be filed through. If grown from tubers, small ones may be put out in April and grown along indoors until June, when the conditions will be favorable for rapid growth, or, at least, such that the plants will not stand still. No care has been taken in selecting choice plants of our native Nelumbo, but the flowers vary considerably, some of them being as clear and deep in color as Marliac's Nymphæa chromatella. Altogether, this seems to be a promising aquatic plant for experiments in hybridizing.—Ed.]

The Dahlia Stalk-borer.

To the Editor of Garden and Forest:

Sir,—You inquire in your issue for September 5th regarding the larva of the Noctulid moth, Gortyna nitela, preying upon Dahlias. I have noticed it here for three or four years past. It does not generally, with us, destroy the plants directly if not removed, but weakens the stems, so that they are easily broken by the wind or rain, or fall over of their own weight. By tying the plants to stakes passable blooms may be obtained, impaired, however, by the lessened vitality of the plant. But a little attention in season will generally get rid of the pest. Packard, in his *Guide to the Study of Insects*, quotes from the *Prairie Farmer* the following mode of treatment: "The careful culturist need fear nothing from this troublesome insect, as an occasional close inspection of the plants about the 1st of July will reveal the hole where the borer has entered, which is generally at quite a distance from the ground, and by splitting downward one side of the stalk with a penknife it may be found and killed. If this inspection be made at the proper time the worm will be found but a short distance from the hole, and the split in the stalk will heal by being kept closed with a thread." I have found a similar borer in the stem of the Tomato, and treated it in this way, not using a thread, but pressing the tissues together by the fingers. It is well to tie the stalks to a stake if the injury has gone far, lest they break where weakened. The borers do not always go downward in the Tomato, but a little inspection will reveal the direction.

This Gortyna attacks a variety of plants, and is popularly called the stalk-borer. There is another, called by Harris Gortyna zeæ, which he states, in his *Insects Injurious to Vegetation*, attacks the Dahlia. This is properly the Corn stalk-borer. Packard gives it as generically different in his Guide. Its habits are somewhat different from those of the Dahlia or Aster stalk-borer, since it undergoes its tranformations in the stalk of the Corn, while the stalk-borer which afflicts the Dahlias crawls into the ground to go into the chrysalis stage. Taking Mrs. Seliger's identification to be correct, it would not be the true Corn stalk-borer which injured her plants, but the Dahlia or Aster stalk-borer.

Chicago, Ill. *E. J. Hill.*

Keeping Half-hardy Plants over Winter.

To the Editor of Garden and Forest:

Sir,—Every year's added experience more firmly convinces me that the best way to deal with half-hardy shrubs and plants is to lift them in late autumn, pack the roots well around with moderately moist soil and set them in a rat-proof cellar over winter. I treat Crape Myrtle, Oleanders, Agapanthus, Tritomas, etc., after this manner, and, after ripening them off in some cool but sheltered place, like a wood-shed or back piazza, put them in the cellar and leave them there until spring. Unless the cellar has an unusually dry atmosphere, or the winter proves unusually long, large specimens need no watering at all while at rest in the cellar, and smaller ones no oftener than once in five or six weeks. This leaves the wood and tissues plump and sound, while the plant is all the better for its long rest and is ready to start at once into vigorous growth when brought up in the spring. Plants of doubtful hardiness are almost sure to winter well under this treatment, whereas if left in the ground, even with heavy mulching around them,

the shrubs often kill to the ground, and the bulbs are as often as not rotted in the ground.

A still better way is to grow all this class as tub-plants. They can be ripened off with ease in this manner, and suffer absolutely no check from lifting. But as every one cannot procure the large, heavy flower-tubs that large specimens require, or do not wish to take the added care of so many tub-plants over summer, lifting them, if carefully done, will be found a much safer plan than to leave them in the ground.

Half-hardy vines, such as Passion-flower, Solanum Jasminoides and Manettia Cordifolia, can usually be wintered in the middle states out-of-doors, if too large to be taken up easily. To begin with, they should always be planted in some sheltered spot where house-wall, piazza or bay-window will cut off cold winds. After the leaves fall coil the vines to the ground and cover with a deep and wide layer of mulching of some kind.

Pineville, Mo. *Lora S. La Mance.*

Elm Trees in Central Park.

To the Editor of GARDEN AND FOREST:

Sir,—In passing the lower end of the Mall in Central Park recently I noticed that the Elms bordering that walk were almost entirely without foliage. I could not determine by a hasty glance from the driveway whether this was due to the drought or the beetle. If to the latter, will you not add to the suggestions in your editorial in the last issue on irrigation one urging the benefits of spraying the Elms of the city parks? Our college Elms received the two necessary douches last spring, and, in spite of thin soil and long drought, are now green, while their neighbors are brown or bare.

Rutgers College. *Austin Scott.*

Recent Publications.

The Trees of Nebraska.

Third Report on the Native Trees and Shrubs of Nebraska. By Charles E. Bessey. Extracted from the Annual Report of the Nebraska State Board of Agriculture, 1894. Pp. 98–127.

Professor Bessey, of the University of Nebraska, and his assistants are studying the forest-flora of that state in the most thorough and comprehensive manner, and are gradually mapping the distribution of the different ligneous species which occur within the borders of the state in the most accurate manner. Professor Bessey's Catalogue of Nebraska Trees was first published as Bulletin No. 18 of the Agricultural Experiment Station under the title of "A Preliminary Report of the Native Trees and Shrubs of Nebraska." This list was corrected and enlarged, and was again printed in the Annual Report of the Nebraska State Board of Agriculture for 1892. The present publication, which the author tells us is not published "as a complete or final report, but as a contribution to our knowledge of the native woody plants of the state," embodies the information gathered in connection with a collection of specimens of Nebraska trees exhibited last year at Chicago and of various explorations made in the western and north-western counties.

The catalogue, as here published, contains sixty-four trees and seventy-seven shrubs—a large number when it is considered that Nebraska is one of the so-called treeless states, but accounted for by the facts that the eastern border is well wooded with eastern species, while several species of the Pacific silva, descending from the Rocky Mountains, find their most eastern home in the northern and western parts of the state.

Professor Bessey finds, in studying the distribution of the ligneous species of the state, especially with reference to the altitude above the sea-level of the regions they inhabit, that:

Nearly all have probably migrated to the plains from the east. They have, in some cases, done no more than to get a little foothold in the extreme south-eastern counties, to which they have come from the heavy forests of Missouri. A few have doubtless crossed the Missouri River from western Iowa, although this number is evidently very small. Nearly all our trees have come up from the Missouri bottoms and spread from the south-eastern corner of the state west and north-west. Possibly a few may have come up the Blue River from Kansas, but these must eventually be traced to the Missouri River bottoms at the mouth of the Kansas River.

The trees and shrubs which are found only in the western part of the state unquestionably came from the Rocky Mountains, and have spread eastward to their present limits. Only one of these, the Buffalo-berry, has spread itself over the whole state. There is a probability that a further examination of the bluffs of the Niobrara, Platte and Republican rivers will show several more of these Rocky Mountain plants which have come down with the river currents. It is singular that so few of the western trees and shrubs have come down the streams, especially as prevailing winds are also from the westerly parts toward the east. One certainly would have supposed it much easier for the western trees to come down stream, and with the wind, than for the Elms, Ashes, Plums, etc., to have gone up the streams against the prevailing winds. I suspect that the meaning of all this is that eastern conditions are slowly advancing westward; that such climatic and other changes are slowly taking place upon the plains as favor the eastern rather than the western trees.

The Nebraska silva is of special interest; in no other part of the country are members of the Atlantic and Pacific forests so mingled together as in some of the northern and north-western parts of the state; and certainly in no other part of the country do trees so unlike in geographical range as the Black Walnut and the Yellow Pine of the Pacific forest (Pinus ponderosa) grow side by side in the same grove.

Professor Bessey's report is a model which we hope to see the botanists connected with the other agricultural colleges adopt, for a complete knowledge of our forest-vegetation and the distribution of our forest-species can only be obtained by recording year by year, as they are made, the notes of trained field observers.

Two years ago Professor Bailey published an account of some of our native Bush Cherries, which have been recommended for fruit. Since then he has made a wider study of the matter from plants which he has been testing on the University grounds at Ithaca, and in Bulletin No. 70 of the Cornell Experiment Station he gives the result of his latest studies. Three species of native dwarf Cherries are spoken of, the first being the Sand Cherry, Prunus pumila, the second the western dwarf Cherry, P. Besseyi, and the third the Utah hybrid Cherry, which seems to be a hybrid between P. Besseyi and the Sand Plum, P. Watsoni. The Sand Cherry is a variable plant common along the Great Lakes, strictly erect when young, but with reclined trunk as the plant becomes older. The fruit is about half an inch in diameter, black, variable in quality, but giving evidence that it may be improved so that it can be used as a fruit-plant, especially in poor or arid regions, where few other fruit crops can be grown with profit. The second species, which Professor Bailey has named Prunus Besseyi, is already in cultivation. The plant is dwarfer, more compact, and has denser and better foliage than the Sand Cherry. The fruits are variable in shape, often as large as those of an Early Richmond Cherry, and very palatable. It is a plant of great promise, and from the fact that it flourishes over a large area of our interior plains, it will probably adapt itself to sandy barrens and other trying soils and situations. The Utah hybrid is hardy and productive; the cherries are very handsome, being of a deep mahogany color, with a light plum-like bloom, and they ripen about the 1st of August at Ithaca. The flesh is soft and juicy, but it lacks body, and the skin is bitter. Altogether, the quality of this fruit may be pronounced as poor. The plant is a tree-like bush three or four feet high, hardy, productive, and, although it is of no immediate value, it indicates that there may be combinations of dwarf Plums and Cherries which shall have distinct horticultural merit for certain trying situations. In his earlier bulletin Professor Bailey stated that weeping and variegated leaved forms of our common Sand Cherry had been cultivated for ornament. He corrects this by stating that these plants so named by nurserymen are dwarf forms of the Cherry of Europe and northern Asia, P. chamæcerasus. The Cherry sold by nurserymen as P. Japonica pendula is the same European species. The bulletin is well illustrated with reproductions of photographs of the three species in fruit and of branches which have been attacked by different fungous diseases.

Notes.

An English Daffodil grower announces that he has decided to accept twelve guineas, something more than sixty dollars, for a bulb of one of his new hybrid Narcissi.

Vinca rosea, the Madagascar Periwinkle, has been again proving this year that it is one of the best of bedding-plants for dry weather. By the middle of July the plants attain such a size as to completely shade the ground if they are set out originally about a foot apart, and the flowers nestling among the glossy leaves make a most attractive appearance. The variety with white flowers and the one with white flowers and a scarlet eye are preferable to the type, which has rather dull rose-colored petals.

The last number of the London *Garden* which comes to hand contains a colored plate of the double-flowered Datura Cornucopæa, which Messrs. Pitcher & Manda introduced a few years ago. The delicate purple of the large trumpet-shaped flower and its shining dark brown stems are very well reproduced. It is a robust plant, and bears flowers eight or ten inches in length and five or six inches across the limb. These are produced in great abundance, a single plant often yielding two hundred or more during the season.

Professor B. T. Galloway read a paper before the American Association for the Advancement of Science, at its late meeting in Brooklyn, on the "Growth of Radishes as Affected by the Size and Weight of the Seeds." After a discussion of the physiological questions involved, some experiments were reported, the results of which were, in brief, that when large seed was sown ninety per cent. of the crop reached marketable size at the same time—that is, the plants matured in from thirty-five to forty days, while from seed as it usually comes from the market—that is, large and small mixed together—about fifty per cent. of the crop matured in the same time.

Rev. G. H. Englehart, who is well known as an expert in the cultivation of Narcissi, states that the hybrids and cross-bred plants of this genus are rarely sterile. After many years of crossing and the production of a great many new hybrids, he finds that almost every one can be made to yield good seed, although it is necessary in some cases to fertilize the flower artificially. The variety Empress, for example, rarely seeds when left to itself, but when fertilized by hand it is fruitful. Narcissus poeticus verus, too, which is hardly ever fruitful under natural conditions, will almost invariably bear seed if touched with the pollen of the varieties ornatus or Poetarum.

Near the markets and stores of the wholesale fruit-dealers in this city a very considerable trade in branches of our common Wild Black Cherry, Prunus serotina, is carried on in the early morning. The new growth from vigorous young trees, well furnished with fresh green and glossy leaves, is cut to a length of about two feet and a half, and the twigs are tied up in bunches of a dozen. Large masses of these bundles are piled up on the sidewalk or are placed upright in tubs, and sold to retail fruit-venders, who use them to decorate their stands and push-carts. The branches usually come from Long Island or New Jersey, and sell for two or three cents a bunch.

Mr. Carman has received some of our native persimmons from Decatur County, Indiana, which were picked before there was any sign of frost, and yet he pronounces them entirely free from anything like the astringent or puckery quality generally supposed to be characteristic of this fruit until it has been chilled out by a good freezing. These persimmons were pronounced superior in flavor to any of the Japanese kinds; they averaged in size about an inch and a quarter in diameter and were almost seedless. They were richer than many of the popular varieties of plums, and if Mr. Carman had any objection to their quality, it was that they were too sweet. There can be no doubt that by selection, and, perhaps, by hybridizing with the foreign varieties, our native persimmon could be developed and improved into one of the most luscious of fruits.

The last New York Legislature passed a law appropriating $8,000, to be expended at Cornell University for the benefit of the fruit-growers in western New York. The law was enacted such a short time ago that no experiments which required much time or care could be undertaken and conducted the present season. But Professor Bailey has prepared a bulletin, entitled "Hints on the Planting of Orchards," which gives directions about the preparation of the land, the manner in which the trees should be set and trimmed and the best place for purchasing young trees. Of course, no attempt is made to introduce new methods into the orchard practice of the state, but this little pamphlet of fourteen pages gives such instructions as a beginner needs. It is altogether a useful little treatise, clearly and concisely setting forth the reasons for the practice recommended, and it is illustrated in such a way so as to help to an understanding of the text. Although it has been prepared to furnish elementary instruction, fruit-growers who are no longer novices will find in this bulletin so many helpful reminders and suggestions that they will feel amply repaid for reading it.

Two or three plants of Gordonia Altamaha are now in flower in the Arnold Arboretum. The plants are only about three feet high and are from cuttings taken in July, 1891. They have stood out two winters without protection and nothing but the new growth was killed. Of course, the Franklinia, a native of Georgia, is not hardy as far north as Boston, but plants of considerable size have been kept here several years when pegged down in the autumn and covered with sod. In Philadelphia and southward they need no protection after they are once established, and we have often spoken of the singular beauty of their large white incurved petals, which assume something of a cup-shape and enclose clusters of bright yellow stamens with light straw-colored anthers. They are especially attractive at this season, when large flowers are not common in the shrubbery, and their attractiveness is increased by their background of dark green lustrous leaves.

A correspondent of the *Country Gentleman* writes that he has found a moderate amount of shade beneficial to Red Raspberries. As a rule, no plants grow strongly or produce abundantly when standing near trees which rob the soil of its nutriment, but, somehow, Raspberries under the shade of trees seem to grow larger canes and yield more and larger berries. To make sure that his observation was correct, the grower who made this report counted the berries on eight hills which grew in the open sunlight and eight others which had grown together in the shade. The result was that the plants in the shade bore about fifty per cent. more berries, while the size of these berries averaged a third larger than that of those in the sun. The eight hills in the shade averaged four hundred berries each for eight pickings, and two hundred of these berries filled a quart measure. Taking the season through, the shaded stools yielded from four to five quarts each, while in the whole field, including both strong and weak plants, the average yield was about three quarts.

The *Agricultural Gazette*, of New South Wales, contains an interesting report of some experiments in extracting the perfume from flowers. It was found that from Bouvardia Humboldtii, which had not up to the present been used for manufacturing purposes, a powerful yet delicate perfume can be extracted, which possesses all the requisite qualities as a body for first-class bouquet. Carnations yield a very powerful and lasting fragrance which proves of great service as an ingredient for perfumes of varied quality, while varieties of perennial Phlox yielded a very peculiar, distinct and valuable odor hitherto unknown to perfumers. The experiment showed that the ordinary perfume plants can be cultivated in New South Wales with profit, and that many cultivated flowers which are not worked elsewhere for perfumes develop in that region new and unique odors which ought to command a place in the markets of the world, while the abundant native flora offers many species that might be brought into cultivation with profit for perfumery purposes and give odors of special value.

Amateurs who are now taking up plants and potting them for flowering in the window-garden ought to remember to select small but vigorous specimens and keep them rather backward until strongly established. The better way would, of course, have been to take cuttings earlier in the season; if started as late as this they will hardly make plants strong enough to bloom well until the latter part of winter. The usual practice of lifting large plants which have been doing duty out-of-doors for several months, with the hope that they will continue the same good work all through the winter, is usually doomed to disappointment. On this point the *Rural New Yorker* very truly says: "It is certainly unreasonable to expect plants that have grown and bloomed luxuriantly in our stimulating and almost tropical summer to adapt themselves at once to the changed condition of sitting-room culture during the short gloomy winter days, especially after the violent shock they receive in transplanting. The tyro in floriculture can still secure a stock of winter bloomers by potting up healthy plants which, for some reason, have been prevented from overblooming, taking care to cut back the growth severely in proportion to the shortened roots."